

CLAIMS

What is claimed is:

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A'*

1 1. A method comprising:
2 providing prerequisite information regarding page sub-components of a graphical
3 user interface (GUI) that are prerequisites to other page sub-components of the GUI;
4 in response to a request for a destination page of the GUI and with reference to
5 the prerequisite information, identifying one or more page sub-component prerequisites
6 of page sub-components associated with the destination page;
7 determining whether one or more requirements of an instance of an identified
8 page sub-component prerequisite have been satisfied by invoking a method of the
9 instance that causes stored information regarding the state of the page sub-component
10 prerequisite to be retrieved from a current environment/context; and
11 causing the destination page to be displayed with (1) content associated with the
12 identified page sub-component prerequisite if any of its one or more requirements have
13 not been satisfied and (2) content associated with those of the page sub-components
14 having no page sub-component prerequisites or having page sub-component prerequisites
15 whose requirements have all been satisfied.

1 2. The method of claim 1 wherein the prerequisite information is stored in a Java
2 properties file.

1 3. The method of claim 1, further comprising supporting definition of hierarchical
2 relationships of page sub-component prerequisites by:
3 iterating through each of the identified page sub-component prerequisites for a
4 particular page sub-component associated with the destination page in a predetermined

5 order until encountering the first page sub-component prerequisite that has one or more
6 unsatisfied requirements; and
7 displaying the first page sub-component prerequisite of the identified page sub-
8 component prerequisites before displaying a second page sub-component prerequisite of
9 the identified page sub-component prerequisites that has one or more unsatisfied
10 requirements and that is dependent upon the first page sub-component prerequisite
11 according to the predetermined order.

1 4. The method of claim 1, wherein each page sub-component has a prerequisite
2 property and the prerequisite information includes, for each page sub-component that has
3 one or more page sub-component prerequisites, a string identifying the one or more page
4 sub-component prerequisites.

1 5. The method of claim 1, wherein the prerequisite information is structured as a list
2 of attribute-value pairs, and wherein the syntax for identifying a first sub-component,
3 sub₁, and a second sub-component, sub₂, as prerequisites of a third sub-component, sub₃,
4 is substantially as follows:

5 sub₃.prereq = sub₁ sub₂.

1 6. The method of claim 1, wherein the request for the destination page comprises a
2 HyperText Transfer Protocol (HTTP) request, and wherein the page sub-components of
3 the GUI are associated with web pages.

1 7. The method of claim 1, further comprising modifying the prerequisite information
2 without necessitating recompilation of software code.

1 8. The method of claim 1, wherein said determining whether one or more
2 requirements of an instance of an identified page sub-component prerequisite have been

3 satisfied includes requesting that a page sub-component prerequisite object verify
4 whether all its requirements have been satisfied.

1 9. The method of claim 1, wherein page sub-component objects corresponding to the
2 page sub-components of the GUI and page sub-component prerequisite objects
3 responsible for ensuring satisfaction of one or more prerequisite conditions are loosely
4 coupled and may be dynamically associated with each other by way of the prerequisite
5 information.

1 10. A method of presenting a page requested by a user comprising:
2 in response to a request for a destination page of a graphical user interface (GUI),
3 creating an instance of a container to represent the destination page, the container
4 including a list of sub-components to render;
5 identifying one or more sub-components associated with the destination page;
6 for each of the one or more sub-components
7 determining whether the sub-component has any page sub-component
8 prerequisites with reference to a set of prerequisite information, the set of
9 prerequisite information including information regarding sub-components of the
10 GUI that are prerequisites to other sub-components of the GUI, and
11 if the sub-component has a page sub-component prerequisite and if one or
12 more requirements of the page sub-component prerequisite remains unsatisfied,
13 then adding an instance of the page sub-component prerequisite to the list of sub-
14 components associated with the container, otherwise adding an instance of the
15 sub-component to the list of sub-components; and
16 causing the destination page to be displayed by rendering the output of the
17 instances on the list of sub-components, whereby page sub-component prerequisites that
18 have one or more requirements that remain unsatisfied are displayed in place of the
19 corresponding sub-components.

1 11. A graphical user interface (GUI) system for enforcing page sub-component
2 prerequisites comprising:
3 a properties data store including information regarding page sub-components of
4 the GUI that are prerequisites to other page sub-components of the GUI;
5 a base agent to respond to requests for a destination page of the GUI, in response
6 to a request for the destination page, the base agent creating an instance of a container to
7 represent the destination page and initiating display of the destination page after a list of
8 page sub-components of the container has been populated; and
9 a sub-component prerequisite factory decoupling the page sub-components from
10 their respective page sub-component prerequisites, the sub-component prerequisite
11 factory to either (1) cause an instance of an identified page sub-component prerequisite to
12 be added to the list of page sub-components if it determines that one or more
13 requirements of the identified page sub-component prerequisite are unsatisfied or (2)
14 cause an instance of the page sub-component to be added to the list of page sub-
15 components, whereby page sub-component prerequisites that have one or more
16 unsatisfied requirements are displayed in place of the corresponding page sub-
17 components.

1 12. The system of claim 11, wherein the prerequisite information is stored in a Java
2 properties file.

1 13. The system of claim 11, wherein the sub-component prerequisite factory supports
2 hierarchical relationships of page sub-component prerequisites by:
3 iterating through each of the identified page sub-component prerequisites for a
4 particular page sub-component associated with the destination page in a predetermined
5 order until encountering the first page sub-component prerequisite that has one or more
6 unsatisfied requirements; and

7 displaying the first page sub-component prerequisite of the identified page sub-
8 component prerequisites before displaying a second page sub-component prerequisite of
9 the identified page sub-component prerequisites that has one or more unsatisfied
10 requirements and that is dependent upon the first page sub-component prerequisite
11 according to the predetermined order.

1 14. The system of claim 11, wherein each page sub-component has a prerequisite
2 property and the prerequisite information includes, for each page sub-component that has
3 one or more prerequisite sub-components, a string identifying the one or more page sub-
4 component prerequisites.

1 15. The system of claim 11, wherein at least a portion of the information of the
2 properties data store is structured as a list of attribute-value pairs, and wherein the syntax
3 for identifying a first sub-component, sub_1 , and a second sub-component, sub_2 , as
4 prerequisites of a third sub-component, sub_3 , is substantially as follows:

5 $sub_3.prereq = sub_1\ sub_2.$

1 16. The system of claim 11, wherein the requests correspond to HyperText Transfer
2 Protocol (HTTP) requests, and wherein the page sub-components of the GUI are
3 associated with web pages.

1 17. The system of claim 11, wherein prerequisite relationships among two or more
2 page sub-components of the page sub-components of the GUI may be modified without
3 necessitating recompilation of software code by editing the information of the properties
4 data store.

1 18. The system of claim 11, further comprising page sub-component objects
2 corresponding to the page sub-components of the GUI and page sub-component
3 prerequisite objects responsible for ensuring satisfaction of one or more prerequisite

4 conditions are loosely coupled and may be dynamically associated with each other by
5 way of the prerequisite information.

1 19. A machine-readable medium having stored thereon data representing sequences
2 of instructions, the sequences of instructions which, when executed by a processor, cause
3 the processor to:

4 identify one or more page sub-component prerequisites of page sub-components
5 associated with a destination page of a graphical user interface (GUI) in response to a
6 request for the destination page and with reference to the prerequisite information
7 regarding page sub-components of the GUI that are prerequisites to other page sub-
8 components of the GUI;

9 determine whether one or more requirements of an instance of an identified page
10 sub-component prerequisite have been satisfied by invoking a method of the instance that
11 causes stored information regarding the state of the page sub-component prerequisite to
12 be retrieved from a current environment/context; and

13 cause the destination page to be displayed with (1) content associated with the
14 identified page sub-component prerequisite if any of its one or more requirements have
15 not been satisfied and (2) content associated with those of the page sub-components
16 having no page sub-component prerequisites or having page sub-component prerequisites
17 whose requirements have all been satisfied.